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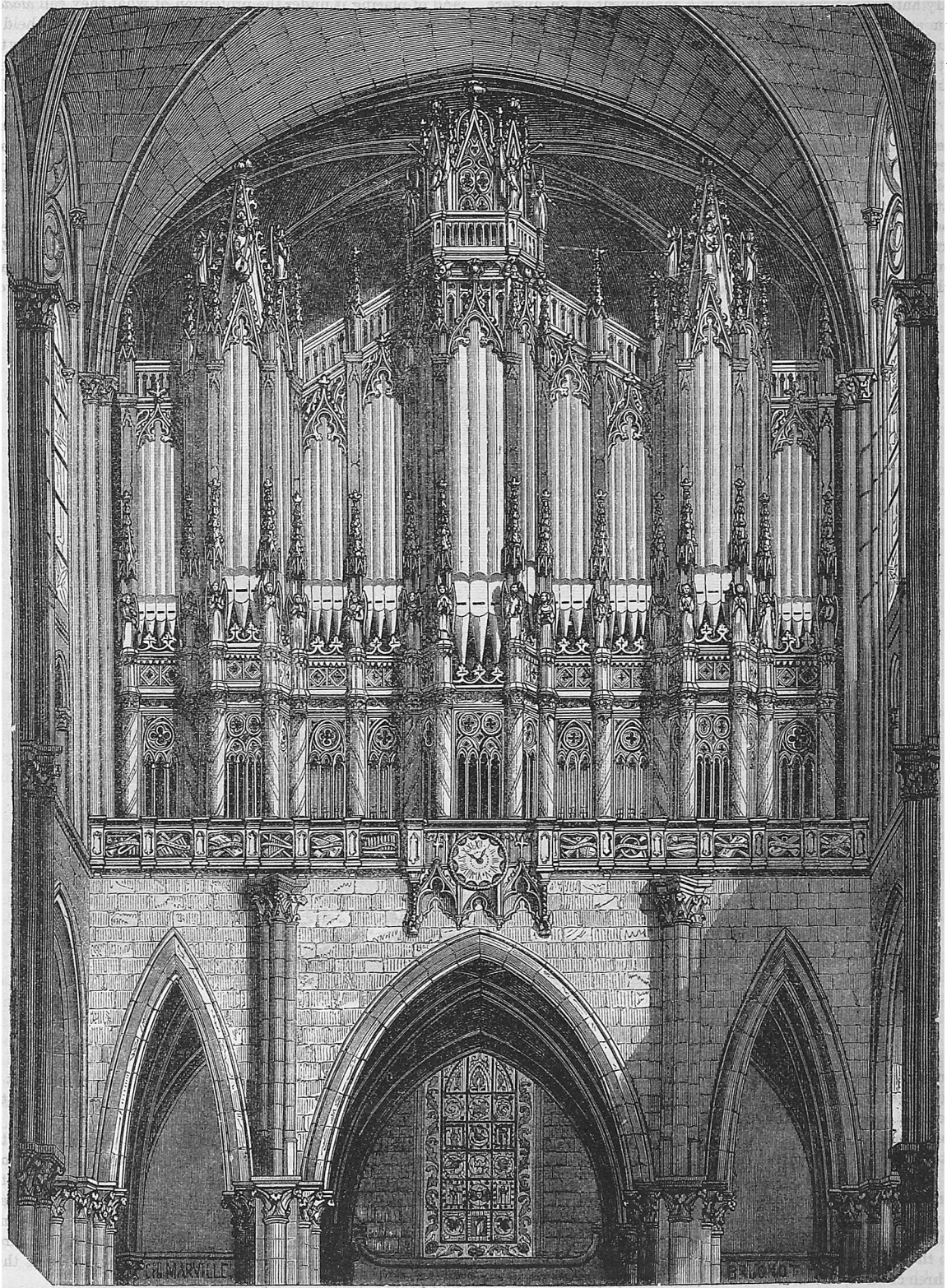
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## SOUND AND MUSICAL INSTRUMENTS.



GRAND ORGAN OF THE CHURCH OF ST. DENIS AT PARIS.

SOUND, as most of our readers are aware, arises from vibrations of the air, diverging in waves from a centre, like the ripples on calm water when a stone is thrown into it. This may be made apparent to the eye by the vibrations of a musical glass

when placed in water, and it may be felt by the vibrations of all instruments. It is the greater or less rapidity of these vibrations, within a given space of time, which causes the different degrees of loudness or intensity in sound. For

example, we can distinguish a tone so low that the undulations number only 12½ in a second, and so high that the undulations in the same space of time number 6,000. Higher than this sound is but a monotonous roar to the human ear. Every sound is a mixture of three tones, just as every ray of light is a mixture of three primary colours. These colours, red, yellow, and blue, correspond to the primary sounds c, e, and g. The vibrations of c are 480, of e 300, of g 360.

All sound appears to be echo and reflection; in the real echo, the first sound is from near surfaces, the second from distant surfaces. When we speak of the report of a cannon "reverberating" amongst hills, we mean its reflection from surfaces more and more distant, until the vibrations cease to travel any further. Echoes are distinguished when the time between the delivery of a sound and its return is more than 1-12th of a second.

Sounds are more intense when the air is denser. In the Arctic regions persons can converse at more than a mile distant, when the thermometer is below zero. At the temperature of freezing 32° F., sound travels 1,100 feet in a second. For lower temperatures deduct, and for higher temperatures add half a foot. In a balloon the barking of dogs on the ground may be heard at an elevation of three or four miles; and on Table Mountain, a mile above Cape Town, every sound may be heard distinctly from below. The fire of the English when landing in Egypt under Sir Ralph Abercrombie was distinctly heard at a distance of 130 miles. These results may be all obtained with greater or less facility according to the state of the atmosphere.

From its greater density water is a better conductor of sound than air. In the former sounds possess twice the distinctness, and travel with four times the velocity that they do in air; but owing to the greater elasticity of the latter, sound moves round obstructions better in it than in water.

As might be expected from their greater density, solid bodies transmit sound better than either air or water. The scratch of a pin at one end of a beam is heard at the other, and it is believed that a bar of iron ten miles long would transmit sounds almost instantaneously. The ear is not fitted to receive two loud sounds in succession. In verses for music the syllables should follow in the same order of accents as the sounds. This is the secret of the success of Moore and Wolcot. The sense of hearing arises from an expansion of nerves into the inner chamber of the ear, and these receive the vibrations of the tympanum, a strained membrane. This elastic membrane is damped by a small bone, called the mallet; but like a drum it will not transmit to the brain two loud sounds in immediate succession. Observations can be made on the vibrations of sound by striking an instrument over a plate covered lightly with sand, in which the undulations become distinctly marked.

The organ is the king of musical instruments, as it combines the excellences of every one of them. It is, in fact, a full orchestra of wind instruments, all supplied with wind from one pair of bellows. It has no restriction of scale, but may extend from the lowest to the highest musical note appreciable by the human ear. The deepest tones produced by the pedal pipes have been compared to "harmonious thunder," while the highest notes of the smallest metallic stops have the shrillness of a canary's whistling. The largest pipe expresses the size, as eight, sixteen, or thirty-two feet organs. That at Ulm, is ninety-three feet high, and twenty-eight broad; its largest pipes thirteen inches bore, with sixteen pairs of pipes. The great organ at Haarlem is 108 feet high, and fifty feet broad, with 5,000 pipes, resembling columns of silver rising from the ground to the roof. It produces a tone of thunder. The organ of the new church at Amsterdam has fifty-two whole stops, besides half stops, and two rows of keys for the feet, and three for the hand, and a set of pipes that imitate a chorus of human voices. The famous Temple organ, in London, was erected by competition of Schmidt and Harris, two famous builders, and after long protracted disputes about their merits, the question was referred to Mr. Jeffries, afterwards chief justice, who decided in favour of Schmidt.

The mechanism of the organ is complicated, and without the aid of illustrations (which we hope to call in on some future occasion) it would be impossible to give the reader an accurate idea of it. The principle is, that a number of pipes of various bores are ranged together. When the player touches a key, or a pedal, he opens a valve at the extremity of one of these. The air immediately rushes in, from the chamber in which it has been condensed by the bellows, and the interior of the tube is so arranged that it shall produce a certain definite note. Each stop is a particular set of pipes, differing in pitch, but all having the same character of sound. Some stops imitate the flute sound, some the trumpet sound, and so on.\*

In connexion with organs, we may mention that church music was first systematised by St. Ambrose, at Antioch, and was afterwards improved by the chant of Pope Gregory I., about the year 690. The notes were letters over the syllables, but Guido d'Arezzo invented the gamut and musical notation in 1100.

Luther was the inventor of metrical psalmody, about 1517, and it spread with the Reformation. The first tunes were popular airs and dances; the "Old Hundredth," was a love ditty; "Rebuke me not," was a jig; and "Stand up, O Lord," was a Poitou dance. Gardiner, under the sanction of George IV. and Archbishop Manners, adapted 220 strains of Haydn, Mozart, and Beethoven, to as many of the best versions of the psalms. Madrigals, for four or five voices, were very fashionable in the seventeenth century, when Marini, Este, Morley, and Wilbye, composed those which are still such favourites, and are nightly sung at all the cheap concerts. Catches belong to the same period. Scotch music is referred to their James I. The tunes in which the 4th and 7th are omitted, seem to be formed from the Greek lyre of six or seven strings. They were first performed in a London concert in 1722.

The English excel in anthems, and Tallis, Bride, Farrant, Gibbons, Blow, Purcell, Wise, Clarke, Croft, Green, Boyce, and Nares, are celebrated. "But musically speaking," Gardiner observes, "England has not produced a single original idea." He ascribes the thoughts of Purcell and Arne to the Italians, and the English grave church music to the Flemings. "God save the Queen" is a prayer full of energy and fervour, the origin of which is unknown.

In America, "Yankee Doodle," albeit a very unromantic name, and "Hail Columbia," stir the national heart to its centre. They breathe of liberty and independence, and tell in their own unmistakable fashion that the stripes and the stars owe no allegiance to the red cross of St. George. The great American revolution gave rise to these songs, as the popular outburst in France, which overturned the old regime, gave birth to the "Marseilles Hymn."

The English organ-builders far surpass their continental rivals in mechanical skill and delicate finishing, while in tone they at least equal them. One of the greatest achievements of the French organ-builders in recent times has been the organ of the famous church of St. Denis, which is now the finest in France. It took eight years in its construction, and was erected on the 9th of October, 1840, and inaugurated (the French "inaugurate" everything) in September, 1841. The bellows is composed of eight grand reservoirs, containing about 88,000 cubic feet of air. This enormous quantity of air is always ready to feed the instrument, and provide for the vast consumption occasioned by seventy stops, and about five thousand pipes, which give out such a volume of sound as shakes the church. The designs of the framework are elegant, and in perfect harmony with the general decoration of the building. For more than fifty years previous to this, no organs of any size or importance were manufactured in France.

It was built by Monsieur Cavaillé-Col (the same artist who built the magnificent organ of the Madeleine at Paris, the tone of which we never heard equalled elsewhere, and which has a

\* Knight's "Cyclopædia of the Industry of all Nations."

most extraordinary *vox-humana* stop). The contract price was 200,000 francs (£8,000); but we were informed that it actually cost more. It contains 70 real stops, 4,600 pipes, and three rows of keys (manuals 54 notes each); 2 octaves of pedals, and 9 *pedales de combinaison* (composition pedals), one of which makes octaves *below* of all the notes touched—one at least of the diapasons has 4 pipes to each note, and there is a *furniture* of 7 ranks. There are 5 pairs of bellows. The effect of hail, when a storm is imitated, is made by stones and sand, or something of that nature, enclosed in a wooden oblong case which turns on a pivot.

The last organ built by Monsieur Cavaillé-Col, was that for the Church of *S. Vincent de Paul* at Paris, which was opened in February, 1852. It contains 46 stops, and 2,639 pipes, 3 rows of keys, 2 octaves of pedals, and 12 *pedales de combinaison*; amongst the stops are *viol de gamba*, *hautbois*, *cor-anglais*, *basson*, *flûte harmonique*, *clarionette*, *trumpette harmonique*, *voix humaine*, &c. It was performed upon at the opening by Monsieur *Lefebvre-Trely*, the admirable organist of the Madeleine.

### THE FAIRIES IN NEW ROSS.

THERE lived, some thirty years since, in the eastern part of the suburbs of New Ross, in the county of Wexford, denominated the "Maudlins," a hedge carpenter named Davy Hanlan, better known to his neighbours by the sobriquet of "Milleadh Maide," or "Speilstick." Davy plied his trade with all the assiduity of an industrious man, "and laboured in all kinds of weather" to maintain his little family; and as his art consisted principally in manufacturing carts, ploughs, and harrows (iron ploughs not being then in use), for the surrounding farmers, and doctoring their old ones, the sphere of Davy's avocations was confined to no mean limits.

It was a dry, sharp night, in the month of November, and darkness had set in long before Davy left Mount Hanover, two miles distant from his home. At length he started forward, and had already reached the bridge of the Maudlins, when he stopped to rest; for besides his tools he carried a bundle of wheat straw, which he intended for a more than usually comfortable "shake-down" for his dear rib Winny. The moon had by this time ascended above the horizon, and by its silvery radiance depicted in delicate outline the hills rising in the distance, while the tender rays mixing with, and faintly illumining the gloom of, the intermediate valleys, formed a mass of light and shade so exquisitely blended as to appear the work of enchantment. As Davy leaned on the parapet of the bridge, a thrill of alarm involuntarily disturbed his feelings: he was about to depart when he heard a clamorous sound, as of voices, proceeding from that part of the valley on which he still gazed. Curiosity now tempted him to listen still longer, when suddenly he saw a group of dwarfish beings emerging from the gloom, and coming rapidly towards him, along the green marsh that borders the Maudlin stream. Poor Davy was terror-stricken at this unusual sight; in vain he attempted to escape: he was, as it were, spell-bound. Instantly the whole company gained the road beside him, and after a moment's consultation they simultaneously cried out, "Where is my horse? give me my horse!" &c. In the twinkling of an eye they were all mounted. Davy's feelings may be more easily imagined than described, and in a fit of unconsciousness his tongue, as it were mechanically, articulated "Where is my horse?" Immediately he found himself astride on a rude piece of timber, somewhat in shape of a plough beam, by which he was raised aloft in the air. Away he went, as he himself related, at the rate of nine knots an hour, gliding smoothly through the liquid air. No aeronaut ever performed his expedition with more intrepidity; and after about two hours' journeying the whole cavalcade alighted in the midst of a large city, just as

"The iron tongue of midnight had told twelve."

One of the party, who appeared to be a leader, conducted them from door to door, Davy following in the rear; and at the first door he passed them the word, "We cannot enter, the dust of the floor lies not behind the door." Other impediments prevented their ingress to the next two or three doors.

At length, having come to a door which was not guarded by any of these insuperable sentinels which defy the force of a fairy assault, he joyfully cried out, "We can enter here;" and immediately, as if by enchantment, the door flew open, the party entered, and Davy, much astonished, found himself within the walls of a spacious wine-store. Instantly the heads of wine vessels were broken, bungs flew out, the carousing commenced, each boon companion pledged his friend as he bedewed his whiskers in the sparkling beverage, and the was-sail sounds float round the walls and hollow roof. Davy, not yet recovered from his surprise, stood looking on, but could not contrive to come at a drop; at length he asked a rather agreeable fairy who was close to him to help him to some. "When I shall have done," said the fairy, "I will give you this goblet, and you can drink." Very soon after he handed the goblet to Davy, who was about to drink, when the leader gave the word of command:

"Away, away, my good fairies, away!"

Let's revel in moonlight, and shun the dull day."

The horses were ready, the party mounted, and Davy was carried back to the Maudlin bridge, bearing in his hand the silver goblet, as witness of his exploit. Half dead he made his way home to Winny, who anxiously awaited him; got to bed about four in the morning, to which he was confined by illness for months afterwards. And as Davy "lived from hand to mouth," his means were soon exhausted. Winny took the goblet and pledged it with Mr. Alexander Whitney, the watchmaker, for five shillings. In a few days after a gentleman who lived not twenty miles from Creywell Cremony came in to Mr. Whitney's, saw the goblet, and recognised it as being once in his possession, and marked with the initials "M.R.," and on examining it found it to be the identical one which he had bestowed, some years before, on a Spanish merchant. Davy, when able to get out, deposed on oath before the Mayor of Ross (who is still living) to the facts narrated above. The Spanish gentleman was written to, and in reply corroborated Davy's statement, saying that on a certain night his wine-store was broken open, vessels much injured, and his wine spilled and drunk, and the silver goblet stolen. Davy was exonerated from any imputation of guilt in the affair, and was careful, during his life, never again to rest at night on the Maudlin bridge.

*Notes and Queries.*

### HOPE.

THE ancients raised temples to Hope. Some Roman medals represent her under the figure of a young girl, holding a flower in her hand. In bas-reliefs, also, she is sometimes seen leaning with her right hand upon a column, and the other bearing poppies and ears of corn. Sometimes she is winged.

Niecamp affirms, that in the Tamoul language there is no word which expresses the idea of hope; but this is a statement which we can hardly believe. He cannot have searched enough, or he would have found one. There is no nation that does not live on hope and desire. There is no existence so miserable that it does not conceal in some obscure corner the small bright light which shines under the heavy weight of all the evils at the bottom of Pandora's box.

This allegory of Pandora is one of the most beautiful with which Hope inspired the old poets. Hesiod borrowed it from one of the most ancient traditions of Asia. Hope, always young, is, like Love, as old as the world.

Another poetical idea of the ancients, was making Hope the sister of Sleep, who eases our pains, and of Death, who ends them. This has been beautifully embodied by Voltaire in the *Henriade*. The sentiment of hope is one of the most delicate